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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,790	11/23/2001	Anat Caspi	8498-043-999	1530
24341	7590	10/18/2004	EXAMINER	
MORGAN, LEWIS & BOCKIUS, LLP. 2 PALO ALTO SQUARE 3000 EL CAMINO REAL PALO ALTO, CA 94306			NAKHJAVAN, SHERVIN K	
			ART UNIT	PAPER NUMBER
			2621	

DATE MAILED: 10/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/993,790	CASPI, ANAT	
	Examiner	Art Unit	
	Shervin Nakhjavan	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-10 and 12-20 is/are allowed.
- 6) ☒ Claim(s) 1 and 11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 6-21-04 have been fully considered but they are not persuasive. Applicant arguments with respect to claims 1 and 11 state that, in applicant's invention, the two steps global (former step) and iterative local transformation (latter step) are two distinct steps and are not part of each other, and they are related only by the output of former being the input of the latter. In addition, applicant argues that rigid transformation inherently assumes transformation of images of rigid *bodies* and, Moshfeghi (US 5,633,951) does not teach transformation of images of rigid bodies since rigid bodies are inelastic or not deformable. Applicant further reiterates that Moshfeghi does not teach the *separate* global and iterative local transformation of claim 1 as discussed above because, the Moshfeghi's method is an iterative process and the steps are inseparable from each other and if global transformation is step 38 of Moshfeghis method, the global transformation is performed repeatedly. Examiner agrees that Moshfeghi teaches inseparable (as pointed by applicant) steps of global transformation (Figure 2, step 38) and iterative local transformation (figure 2, iterative process starting at step 42 and ending at the step) however, examiner disagrees that claim language requires the distinct/separate features of said steps. Specifically, the claim language does not have any emphasis on the separate and/or distinctness of the two steps of global and iterative local transformation from each other. Examiner disagrees with applicant's arguments regarding the ordinary meaning of *rigid transformation* in the art specifically relates the

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transformation to images of *rigid bodies* and that what the claim language requires.

Specifically, not only claim language does not mention a transformation of a rigid body image, applicant's specification is also silent with regards to the specific body or object being imaged or "categorical meaning" of rigid transformation however, Moshfeghi is not silent with regard to this point as discussed in Column 4, Lines 50-53. Also as applicant mentions in page 8, paragraph 1 of the arguments, one kind of rigid transformation is a translation, Moshfeghi anticipates that in step 38 by Global 3D translation which fully anticipates the rigid transformation per applicant requirement. In addition, Aiger et al. (US 5,956,418) as being an ordinary skilled person in the art teaches a rigid transformation of images, and defines rigid transformation as being only a preliminary *coarse transformation* in registering two images regardless of the rigidity of the imaged body, and that is what Moshfeghi teaches by coarse registration in column 7, line 1 through column 8, line 9, as a preliminary warping by steps a-e. Therefore, claims 1 and 11 stand rejected.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Moshfeghi (US 5,633,951).

Regarding claim 1, Moshfeghi teaches, limitation of claim 1, a method for registering images (Column 4, Lines 57-59), comprising the steps of: receiving a first image and a second image, said first image and said second image including data sets of at least two dimensions (Column 4, Lines 57-59, wherein the volumetric images are generated from two or three dimensional imaging which includes at least 2D image data as discussed in Column 4, Lines 15-19); globally transforming one of said images via a rigid transformation technique (Column 7, Lines 51-58, wherein the step of the goal surface image to warp into registration with the start surface image); locally transforming one of said images via an iterative motion tracking technique (Column 11, Lines 23-31, wherein the elastic deformation step is *the* local transforming action being performed on the volume 2 image after the image has gone through warping action as discussed above, and the elastic deformation action is being performed based on motion tracking since elastically transforming the entire volume image 2 using local deformations determined as a function of *local displacements of points* on the warped surface as discussed in Column 2, Lines 51-54 wherein local displacement function is *the* motion tracking since displacement is a motion component and the action it is iterative as discussed in Column 11, Lines 36-40); and outputting a registered image (Column 4, Line 62 through Column 5, Line 2, where combined image of volume 1 and volume 2 is output to the display 18).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moshfeghi.

Regarding claim 11, while Moshfeghi shows the flow chart of the functional steps of the programming claim 11, Moshfeghi fails to specifically teach programming codes for performing the function of the claim however, it would have been obvious to an ordinary practitioner in the art to generate the corresponding computer codes in view of the flow chart of figure 2 for performing the computer codes including items 38 for receiving of images and global transforming, Item 42 for local transforming, and item 44 for outputting the registered final image.

Allowable Subject Matter

6. The following is an examiner's statement of reasons for allowance: claims 2-10 and 12-20 are allowed because, the prior art of record specifically Moshfeghi does not teach global transforming steps of claims 2 and 12, transformation weighting process on each point in at least one of the images that is not a feature point that is being tracked of claims 10 and 20, combine with other features and elements of the claims.

Other prior art cited

7. Prior art of record cited and not relied upon is considered pertinent to applicant's disclosure.

The US patent 5,970,182 fully anticipates image registration method of claims 1 and 11.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shervin Nakhjavan whose telephone number is (703) 306-5916. The examiner can normally be reached on Monday through Friday from 8:00 am to 5:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau, can be reached at (703) 305-4706.

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Any response to this action should be mailed to:

Assistant Commissioner for Patents
Washington, DC 20231

Or faxed to:

(703) 872-9306 for *formal* communications, please mark "**EXPEDITED PROCEDURE**"

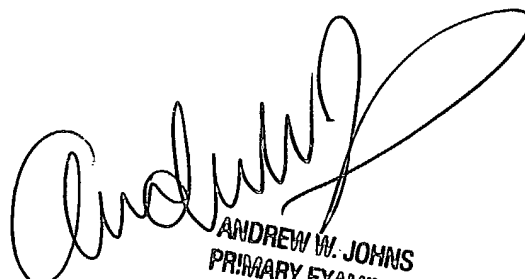
or:

for *informal* or *draft* communications; please label "**PROPOSED**" or "**DRAFT**".

Hand delivered responses should be brought to Crystal Park 2, 2121 Crystal drive, Arlington, VA, sixth floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Tech center 2700 customer service office (703) 306-0377.

Shervin Nakhjavan S.N
Patent Examiner
Group Art Unit 2621
October 6, 2004.



ANDREW W. JOHNS
PRIMARY EXAMINER